

REMARKS

Claims 47 and 63 have been amended in the manner suggested in the Office Action at page 2.

The objection to claim 63 has been overcome by amending the claim to depend on claim 33, as is suggested in the Office Action at page 2.

Claims 38 and 39 have been amended to refer to the direction of flow, which is a term defined in the specification at page 11 and lines 3 to 6.

Dependent claim 34 has been cancelled and its elements incorporated into independent claim 33. Similarly, dependent claim 54 has been cancelled and its element has been incorporated into independent claim 33.

New claim 73 is supported in the application at, for example, by Figures 3, 5 and 7 and page 10, lines 5 to 19. Claim 73 recites an upper rim of a wall that is in a plane perpendicular to the axis which distinguishes EP '445 that shows an inclined deflector that is not perpendicular to an axis.

The rejection of claims 33 to 54, 57, and 65 to 72 as being obvious over EP 0 292 445 (EP '445) in view of Lipps (US 4,234,871) is traversed.

Independent claims 33 has been amended to require a second chamber with a liquid inlet port. This feature is disclosed in the application, for example, Figure 2, at inlet ports 38 to 40, and described in the specification at page 12, lines 28-30. Inlet ports are not shown in shown in EP '445 or the other references applied to reject the claims. The Office Action does not allege that any of the references teach or suggest inlet ports.

The requirement in claim 33 for inlet ports distinguishes all of the references and is not taught, suggested or disclosed by the prior art applied in the Office Action.

EP '445 discloses an oxygenator comprising a tubular casing 1 housing a bundle of hollow fibers 3 which are embedded in a disc of sealing material 6. The flat outer surface 11 of the disc of sealing material is at the same level as the end of the tubular casing 1. The casing 1 is closed by a cap 9 secured to the tubular casing. A single chamber 8 is immediately above the disc of sealing material and below the end cap. EP '446, col. 3, lns. 24-36. The single chamber 8 in EP '445 is not the two chambers required by all of the claims.

EP '445 does not teach an inlet to a first chamber that is below an outlet of a second chamber as is required by independent claims 65 to 72. EP '445 teaches a short passage in chamber 8 between the outlet of the hollow fibers and the end cap. This short passage starts, i.e. has an inlet, at the ends of the hollow fibers which is at an elevation well above the outlet 10 of chamber 8. There is no suggestion, motivation or teaching from the prior art to shorten the hollow fibers such that the inlet to chamber 8 is below the outlet. To do so would result in a large open chamber in which blood would tend to stagnate and clot.

Lipps is cited in the Office Action as disclosing a hydrophobic membrane. Lipps discloses an artificial kidney comprising a dialyzer having a blood outlet 124 that is connected to a bubble trap 158. Lipps, Figure 10; col. 6, ln 59 to col.7, ln 52. The bubble trap 158 comprises an elongated chamber having an upper inlet 124 and a lower outlet

164. The top of the bubble trap 158 is fitted with a hydrophobic membrane 157. Lipps, col. 7, lns 12 to 25. Lipps does not suggest that the end cap shown in EP '445 should include a liquid inlet in the chamber 8 or that this chamber should be divided into two chambers.

With respect to the dependent claims, EP '445 does not disclose a "conical" first chamber as recited in claim 38 and shown in Fig. 10 of the application. Similarly, EP '445 does not show a frusto-conical second chamber as recited in claim 43. EP '445 also does not show the cross-sectional features recited in claim 67.

EP '445 also does not disclose the ratios of the diameter of the first and second chambers as recited in claims 45 and 68. In addition EP '445 does not disclose the elements recited in claims 46 to 49 and 69 to 73 regarding the flow through the chambers. Further, EP '445 does not disclose the umbrella flow recited in claim 52.

EP '445 does not disclose a tangential component as required by claim 51. Also, EP '445 in combination with Lipps does not disclose a membrane tangential to the axis of the device.

EP '445 teaches an inclined deflector element 14 which is contrary to the wall rim that is perpendicular to the axis of the device as is recited in claim 73.

The rejection of dependent claim 55 as being obvious over EP '445, Lipps and Nagai (US 2001/0052290) is traversed for the reasons given above for the patentability of claim 33.

Claim 55 requires a pressure port. That Nagai discloses a pressure port does not suggest modifications be made to the end cap shown in EP '445.

The rejection of dependent claim 56 as being obvious over EP '445, Lipps and Spadaccini (US 6,315,815) is traversed for the reasons given above for the patentability of claim 33.

Claim 56 requires a protective member for the hydrophobic membrane. Regardless of whether Spadaccini discloses a protective member, it does not suggest modifications to the chamber 8 in EP '445.

The rejection of dependent claims 58 to 64 as being obvious over Mathieu (US 4,784,768) in view of EP '445 is traversed for the reasons given above for the patentability of claim 33.

All claims are in good condition for allowance. If any small matter remains outstanding, the Examiner is requested to telephone applicants' attorney. Prompt reconsideration and allowance of this application is requested.

The Commissioner is hereby authorized to charge any deficiency, or credit any overpayment, in the fee(s) filed, or asserted to be filed, or which should have been filed

Jurgen DANNENMAIER et al
Appl. No. 10/595,772
June 30, 2011

herewith (or with any paper hereafter filed in this application by this firm) to our Account
No. 14-1140.

Respectfully submitted,

NIXON & VANDERHYE P.C.

By: /Jeffry H. Nelson/
Jeffry H. Nelson
Reg. No. 30,481

JHN:glf
901 North Glebe Road, 11th Floor
Arlington, VA 22203-1808
Telephone: (703) 816-4000
Facsimile: (703) 816-4100